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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,544	11/26/2003	Koichi Kondo	245936US2SRD	5702

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EXAMINER	
PROCTOR, JASON SCOTT	
ART UNIT	PAPER NUMBER
2123	

NOTIFICATION DATE	DELIVERY MODE
03/27/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/721,544	KONDO, KOICHI	
	Examiner	Art Unit	
	Jason Proctor	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-10,12-16 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-10,12-16 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-4, 6-10, 12-16, and 18 were rejected in the Office Action entered on 14 August 2007.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 December 2007 has been entered.

Applicants' response submitted on 14 December 2007 has amended claims 1, 6, 7, 12, 13, and 18. Claims 1-4, 6-10, 12-16, and 18 are pending in this application.

Claims 1-4, 6-10, 12-16, and 18 are rejected.

Applicants are notified that the Examiner of record in this application has changed.

Response to Arguments – Claim Objections

1. Applicants' arguments regarding the previous claim objections have been fully considered and found persuasive. The previous objections have been withdrawn.

Response to Arguments – 35 USC § 112

2. Applicants' arguments regarding the previous rejections under 35 U.S.C. § 112 have been fully considered and found persuasive. The previous rejections have been withdrawn.

Response to Arguments – 35 USC § 102

3. Applicants' arguments that the Iwashiro reference does not anticipate the claimed invention have been fully considered and found persuasive. The rejections based upon that reference have been withdrawn. An updated search of the prior art has revealed better prior art references and new grounds of rejection have been entered accordingly.

Specification

4. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

The hyperlink appears at page 2, lines 12-13.

Claim Rejections - 35 USC § 101

35 U.S.C. § 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 7-10 and 12 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

Claims 7-10 and 12 recite an "apparatus" comprising "units" that are broad enough to encompass computer software units, especially when read in light of the specification by one of ordinary skill in the art. When a claim is broad enough to read on statutory and non-statutory subject matter, a rejecting the claims as being non-statutory is proper. Claims 7-10 and 12 are broad enough to be software per se and are therefore nonstatutory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 6-10, 12-16, and 18 rejected under 35 U.S.C. 102(b) as being anticipated by "A Hierarchical Hybrid System Model and Its Simulation" by Liu et al. (Liu).

Regarding claim 1, Liu discloses:

A simulation method for simulating a behavior of a mechanism of a mechanical device that is regulated by mechanism control software using a hybrid model of the

mechanical device, the hybrid model including a state transition model and a continuous system model [*"The modeling of hierarchical hybrid systems is achieved by combining continuous-time models with finite state automata... A hybrid helicopter control system is simulated as an example."* (abstract)], the method comprising:

Inputting hybrid model description data representing the hybrid model [*"A 2-D model of a helicopter is extracted from [8]."* (page 3511, § 6.1)];

Analyzing the hybrid model description data to extract first description data of the state transition model and second description data of the continuous system model, which is represented as simultaneous equations of ordinary differential equations and algebraic equations [*"An* execution *of a hybrid automaton is defined [12] as a collection ... (initial condition); (continuous evolution); (discrete evolution); (output evaluation). Intuitively, an execution of a hybrid automaton starts from an initial state, runs the continuous dynamic for a while, makes a discrete state transition, and then runs (another) continuous dynamic for another period of time, and so on."* (page 3508, § 1, notation omitted); *"In each discrete state* q *of a hybrid automaton, there is an "open" continuous subsystem with the form of a set of ordinary differential equations (ODEs)"* (page 3509, § 2.2)];

Generating a table representing a relationship between continuous system equations including the simultaneous equations and switching conditions thereof, based on the extracted first description data [*"Predictable breakpoints are stored chronologically in a* breakpoint table*"* (page 3510, § 3.2); *"If* φ *in (8) is only a function of time (the event of this type is called a* time event*) then we know the exact state transition time before the simulation actually reaches that time. In this case, the state*

transition time is simply registered as a predictable breakpoint. Since the breakpoint table mechanism can guarantee that the simulation will not miss any predictable breakpoint during the execution, the invariant monitor can emit the triggered event at the desired time." (page 3511, § 4.1)];

Generating a plurality of internal data expressions of all the continuous system equations, based on the extracted second description data [*"In each discrete state* q *of a hybrid automaton, there is an "open" continuous subsystem with the form of a set of ordinary differential equations (ODEs)"* (page 3509, § 2.2)];

Starting a simulation of the mechanism after completion of generating the table and generating the internal data expressions [*"When simulating a hybrid system in Ptolemy II, the interaction of discrete and continuous dynamics goes through the following steps:..."* (page 3511, § 5)];

Selecting an active continuous system equation by looking up the table according to an occurrence of an event [*"1.) During continuous evolution, the system is simulated as a CT system where the hybrid automaton is replaced by the continuous dynamics of its current state."* (page 3511, §5)]; and

Outputting data that represents the behavior of the mechanism by solving the selected active continuous system equation by numerical integration using the internal data expressions that correspond to the selected active continuous system equations, wherein the outputted data is supplied to the mechanism control software as a response to a control signal provided from the mechanism control software [outputting data – *"The simulation runs as a Java applet, and the result is shown in Figure 6."* (page 3513, § 6.5); solving continuous system equations by numerical integration – *"The task of a*

simulator is to solve the set of ODEs numerically..." (page 3509, § 3); *"Other integration methods, like linear multistep (LMS) methods and Runge-Kutta (RK) methods, are similarly accomplished."* (page 3510, § 3); supplied to mechanism control software [*"The hybrid system is modeled in Ptolemy II as Figure 5... In each flight mode, there is a concrete controller that computes the control output given the state of the helicopter. "* (page 3512, § 6.5)].

Regarding claim 2, Liu discloses switching the active one of the continuous system equations to another continuous system equation by operating a flag assured for each of the continuous system equations [*"Predictable breakpoints are stored chronologically in a* breakpoint table*"* (page 3510, § 3.2); *"If φ in (8) is only a function of time (the event of this type is called a* time event*) then we know the exact state transition time before the simulation actually reaches that time. In this case, the state transition time is simply registered as a predictable breakpoint. Since the breakpoint table mechanism can guarantee that the simulation will not miss any predictable breakpoint during the execution, the invariant monitor can emit the triggered event at the desired time."* (page 3511, § 4.1)].

Regarding claim 3, Liu discloses wherein the event is response to one of the signal and an evaluation result of an internal variable [*"Predictable breakpoints are stored chronologically in a* breakpoint table*"* (page 3510, § 3.2); *"If φ in (8) is only a function of time (the event of this type is called a* time event*) then we know the exact state transition time before the simulation actually reaches that time. In this case, the state*

transition time is simply registered as a predictable breakpoint. Since the breakpoint table mechanism can guarantee that the simulation will not miss any predictable breakpoint during the execution, the invariant monitor can emit the triggered event at the desired time." (page 3511, § 4.1)].

Regarding claim 4, Liu discloses executing a kinematics simulation which uses the data that represents the behavior of the system [*"A hybrid helicopter control system is simulated as an example."* (abstract)].

Claim 6 recites generating program code corresponding to the method steps of claim 1. Liu discloses this code [*"Ptolemy II"* (abstract)] and discloses the method steps of claim 1.

Claims 7-10 recite an "apparatus" consisting of units corresponding to the methods of claims 1-4. Liu discloses those methods and discloses a software "apparatus" for performing those steps [*"Ptolemy II"* (abstract)].

Claim 12 recites an "apparatus" comprising units similar to claim 7 and perform a method similar to claim 1, all of which is disclosed by Liu and shown above.

Claims 13-16 recite a "computer program stored in a computer readable medium" consisting of means for performing the methods of claims 1-4. Liu discloses that method and a computer program for doing so as shown above.

Claim 18 recites a "computer program stored in a computer readable medium" that performs the method steps of claim 1. Liu discloses this program as shown above.

Conclusion

Art considered pertinent by the examiner but not applied has been cited on form PTO-892.

Substantial portions of the specification and some claim limitations appear to describe computer methods of parsing string input. Sebesta teaches several prior art methods of performing the same.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained

from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason Proctor
Examiner
Art Unit 2123

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Supervisory Patent Examiner, Art Unit 2123